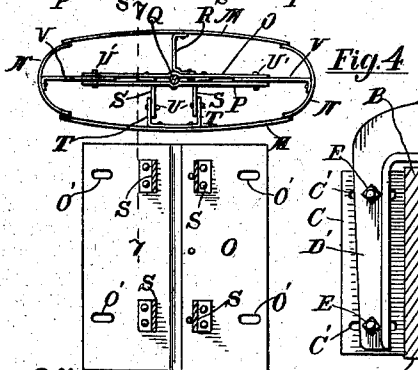
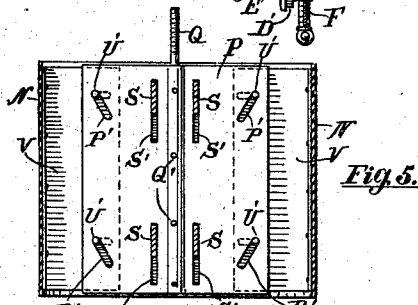
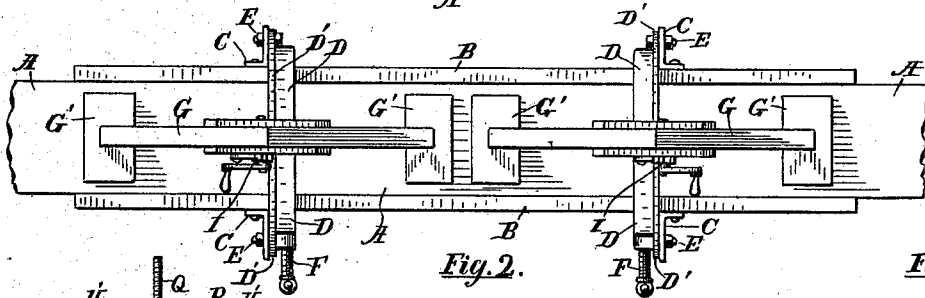
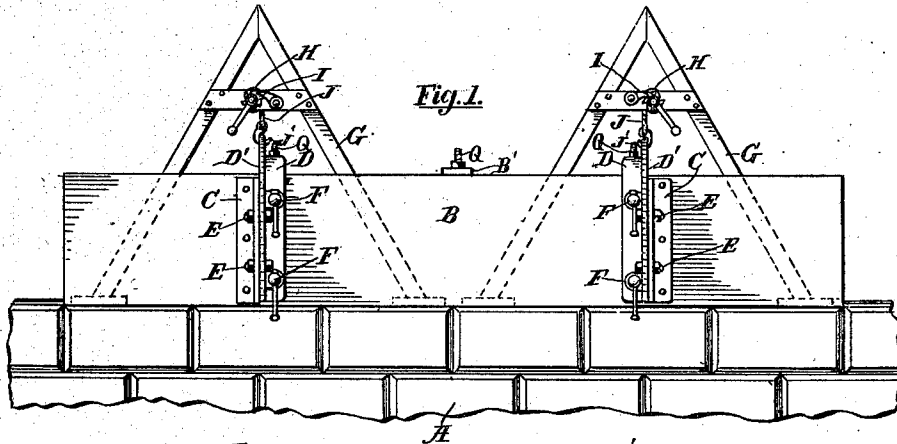


No. 735,214.

PATENTED AUG. 4, 1903.

A. S. CRAMER.
MOLD FOR CONCRETE WALLS.
APPLICATION FILED JAN. 2, 1903.

NO MODEL.



Witnesses *Fig. 6.*

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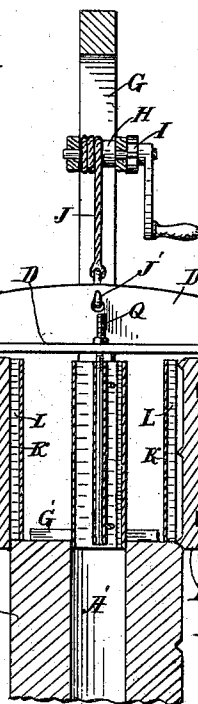


Fig. 3.

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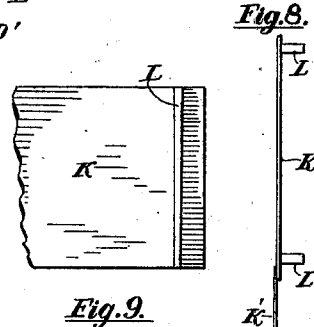


Fig. 9.

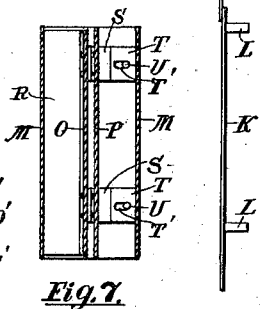


Fig. 7.

UNITED STATES PATENT OFFICE.

AUGUSTUS S. CRAMER, OF COOPERSVILLE, MICHIGAN.

MOLD FOR CONCRETE WALLS.

SPECIFICATION forming part of Letters Patent No. 735,214, dated August 4, 1903.

Application filed January 2, 1903. Serial No. 137,463. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS S. CRAMER, a citizen of the United States, residing at Coopersville, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Molds for Concrete Walls; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in molds for concrete walls, and its object is to provide the same with certain new and useful features hereinafter more fully described, and particularly pointed out in the claims.

My invention consists, essentially, in the combination and arrangement of yokes or frames adjustably connected to and supporting the opposite walls of the mold and connected to the same by bolts passing through slotted openings in angle-irons attached to the molds and screws in the yokes for adjusting the wall of the mold.

My invention also consists of a collapsible core for forming internal openings in walls, consisting of side plates, curved end plates, an inner plate, to which one of the side plates and the two end plates are adjustably attached, and a sliding plate and rod for adjusting the end plates, said rod being also attached to the yoke, whereby the sides of the mold and the case are simultaneously adjusted.

My invention also consists of an improved means for facing the wall with cement, consisting of a series of plates provided with strips on one side spacing the same apart from the inner surface of the mold and to hold the same flat, and a plate-section adapted to be inserted opposite the respective yokes. All of which will more fully appear by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention; Fig. 2, a plan view of the same; Fig. 3, an enlarged transverse section of the same, showing one of the yokes in side elevation; Fig. 4, a plan view of one of the cores; Fig. 5, a side elevation of the same; one side and a part of each end plate being removed; Fig. 6, an elevation of the inner plate O; Fig. 7, a transverse section on the

line 7 7 of Fig. 4; Fig. 8, a plan of the facing-plates; and Fig. 9, an elevation of a portion of one of the said plates.

Like letters refer to like parts in all of the figures.

A represents a portion of the wall in process of construction; B, the walls of the mold, which walls are preferably divided into sections arranged in opposing pairs, each pair being supported in place by strong inverted-U-shaped yokes, preferably of cast-iron, to which said walls are adjustably connected by means of bolts E, extending through the outwardly-projecting flanges of the yokes and like portions of angle-irons C, said irons extending transversely across the outer surfaces of the walls B and firmly secured thereto. These bolts engage horizontally-extended openings C' in the irons C to permit of adjusting the walls B toward and from each other or inclining the same, whereby the thickness of the concrete wall or the inclination of its side may be determined. As a further means of adjusting the walls B, I have shown screws F inserted horizontally in the yokes D and attached at their inner ends to the wall B of the mold, whereby the same is more effectively adjusted as occasion requires. To raise and adjust this device at intervals, as the successive portions of the concrete wall are formed, I provide A-shaped frames G having broad plates G' at their lower ends to rest on the top of the concrete wall, whereby the frames are supported in position over the respective yokes. Each frame is provided with a windlass H, having a pawl and ratchet I. A suitable rope or chain J is attached to the flange D' of the yoke by means of a detachable hook J' and wound upon the windlass, whereby the yokes and molds are supported and vertically adjusted, and the frames may also be readily detached and removed while filling the mold and replaced and attached to raise the mold after a section of the concrete wall has been formed and allowed to set therein.

To form chambers A' in the concrete wall, I provide collapsible cores in such numbers as may be necessary and support the same at intervals, either from the yokes or from transverse bars B', placed across the top of the mold, as occasion requires. This core is made as

follows: Outwardly-curved side plates M and semicylindrical plates N constitute the walls thereof. Arranged in the center of this core is a rod Q, by which the same is operated. Engaging this rod at one side is a plate O, having a vertical groove or channel in which the rod Q is slidable. To this plate O is attached the outer plates M and N. One of the plates M is preferably rigidly attached thereto by a suitable plate R, riveted to the respective plates M and O. The other plate M is preferably attached to arms S, extending horizontally from the plate O, by means of a yoke T, in which are pins U, slidably engaging the slotted openings T', whereby the plate M is supported from the plate O and movably toward and from the same. The end plates N are supported from the plate O by means of flanges V, overlapping the said plate and provided with pins U', which engage horizontally-slotted openings O' in said plate, and thus support the plates N and permit them to move horizontally. To the rod Q is attached a plate P, having diagonally-slotted openings P', engaging the pins U', whereby as the plate P moves upward plates N are moved inward and when the plate P moves downward the plates N are moved outward. This plate P has also vertically-extended openings S', through which the arms S project, and thus guide the plate in its vertical movement and limit the said movement.

To provide means for facing the concrete walls with fine cement compound, thin plates K are provided, to which are secured transverse ribs L, made slightly tapered to be readily withdrawn from the said facings. Said ribs also hold these plates flat and space them apart from the inner surface of the wall B of the mold. These plates K are placed between the yokes D and parallel with the walls B and with the ribs L engaging the inner surface of the said walls, and smaller plates K' having no ribs are placed across the gap between the plates K and beneath the yokes.

To operate my device, it is first adjusted, as shown in the drawings, and sufficient material placed therein to sustain it in position. The frames G are then removed and the mold completely filled. The plates K are then withdrawn, and then the plates K' can be moved edgewise and also withdrawn. The inner coarser material and the finer outer facing material constituting the concrete wall will then coalesce, and after this is sufficiently set the frames G are replaced and bolts E at the side having the screws F are slackened and said screws turned back, thus releasing the molds from the wall. By turning the windlass the yokes, together with the mold, can now be raised and set in proper position for forming the next section of the wall. In so raising the molds the rods Q will first raise the plate P relative to the remaining portions of the core. This will move the end plates N inward and permit the plates M to approach each other. Thus the core will be collapsed and free to rise with the mold. The

core can again be expanded by thrusting the rod Q and plate P downward to place. The plates K and K' are then replaced and the operation of forming another section of the wall A repeated.

The core shown and described is not herein claimed, but is reserved for a separate application.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mold, the combination of adjustable walls, rigid yokes embracing the walls, supports for the walls adjustably attached to the yokes, and extending inward therefrom and permanently attached to the walls, to both support and adjust the same.

2. In a mold, the combination of walls constituting the sides of the mold, a yoke embracing the walls, outwardly-projecting irons on the walls and adjustably connected to the yoke.

3. In a mold, the combination of adjustable walls, a yoke extending transversely above said walls and downward outside the same, angle-irons attached to the walls adjacent to the yokes and having slotted openings, and bolts extending through the yokes and through said openings.

4. In a mold, the combination of adjustable walls, a rigid yoke extending transversely above said walls and downward outside the same, angle-irons on the walls extending outward therefrom and adjacent to the yokes and having slotted openings, bolts extending through the yokes and said openings, and screws extending through the yokes and attached to one of the walls.

5. In a mold, the combination of adjustable walls, yokes embracing the walls, screws in the yokes, means for attaching the screws to one of the walls, and supports attached to the other wall and to the yoke, whereby the walls are both vertically supported, and horizontally adjusted by the yokes.

6. In a mold for making concrete walls, the combination of side walls to the mold, a yoke embracing said walls, supports for the walls adjustable on the yokes and permanently attached to the walls, to both vertically support and horizontally adjust the same, a frame adapted to rest on the concrete wall and extending above the yoke, a windlass having a pawl and ratchet and mounted on the frame, and a rope or chain wound on the windlass and detachably attached to the yoke.

7. In a mold for making concrete walls, the combination of side walls to the mold, rigid yokes extending transversely above the walls and downward outside the same, angle-irons having slotted openings and attached to the walls, bolts extending through said openings and through the yoke, frames adapted to rest upon the concrete wall, and means for raising and supporting the yokes and walls, mounted on the frames and detachably connected to the yokes.

8. In a mold for concrete walls, the combination of side walls, rigid yokes extending transversely above the walls and downward outside the same, angle-irons attached to one wall and to the yokes, screws adjustable in the yokes and attached to the other wall, frames above the yokes and adapted to rest on the concrete wall, and means for raising the yokes and walls mounted on the frames and attached to the yokes.

9. In a mold, the combination of side walls, rigid yokes extending transversely and downward outside the walls, angle-irons rigidly attached to one wall and adjustably attached to the yokes, screws adjustable in the yokes and permanently attached to the other wall, removable frames above the yokes and adapted to rest on the concrete wall, and a windlass, pawl, and ratchet, mounted on each frame and connected to the respective yoke.

10. In combination with molds for making concrete walls, means for facing the walls with different material, consisting of flat plates, and transverse ribs attached to the plates and adapted to engage the inner surface of the molds and to support and space the plates apart from the molds.

11. In a mold, the combination of side walls, yokes extending transversely above the same and downward outside the same and attached to the side walls, thin flat plates adapted to

be placed within the molds, ribs attached to said plates to support the same, and to engage the inner surface of the mold, and smaller plates adapted to be placed beneath the yokes, and to connect the ends of the first-named plates.

12. In a mold, the combination of side walls, a yoke adjustably attached to the walls, a collapsible core, a rod to operate and support the core, said rod being also attached to the yoke, and means for raising and supporting the yoke, whereby the walls and core are simultaneously held and adjusted by the yoke.

13. In a mold, the combination of side walls, angle-irons on the walls, a yoke embracing the walls and extending above the same, and also adjustably attached to the angle-irons, a core consisting of relatively movable plates, a rod to support the core, means for adjusting the plates attached to the rod, means for connecting the rod to the yoke, a frame adapted to rest on a concrete wall and extending above the yoke, and means for hoisting the yoke attached to the frame.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUSTUS S. CRAMER.

Witnesses:

LUTHER V. MOULTON,
GEORGIANA CHACE.